Kellie Martinec

From: Veronica Larson
Sent: Monday, April 08, 2013 2:57 PM
To: Kellie Martinec
Subject: FW: EDF comments on revised Rule 3.13 proposal
Attachments: EDF Revised TX RRC 3.13 comments 4-1-13.pdf

Here it is.

From: Adam Peltz [mailto:apeltz@edf.org]
Sent: Monday, April 01, 2013 12:00 PM
To: Veronica Larson
Cc: Leslie Savage; Scott Anderson
Subject: EDF comments on revised Rule 3.13 proposal

Ms. Larson,

Please find the Environmental Defense Fund's comments on the revised Rule 3.13 proposal attached. Thank you very much for your attention.

Best,

Adam Peltz
Attorney, Energy Program

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April 1, 2013

Via Electronic Mail to Railroad Commission of Texas

Railroad Commission of Texas
1701 N. Congress
Austin, TX 78701

Re: Comments on Revised Proposed Rule 3.13 to Clarify Requirements for Drilling, Casing, Cementing and Fracture Stimulation

Dear Commissioners and Staff:

Environmental Defense Fund (EDF) once again commends the Railroad Commission for its ambitious rulemaking that significantly advances the state of the art on well integrity regulation in the state of Texas, and appreciates the commitment to continuous improvement evident in these several rounds of proposals. While there remain potentially improvable aspects of well integrity that have not been addressed in this particular rulemaking, EDF is for the most part satisfied with the current effort and believes that with one exception it represents a significant step forward in well integrity regulation. As we have stated in our previous comments (attached for the record), an area where the RRC ought to adjust its proposal is the annular gap and permissible cement sheath thickness surrounding each casing string.

Regulatory History

The annular gap issue has received considerable attention since the RRC first proposed to regulate this specification in August 2012. The initial proposal, requiring an annular gap of at least 1.25", while well-intentioned, was criticized by industry for being arbitrary and contrary to industry practice. The second proposal, issued in December 2012, swung too far the other direction by reducing the minimum annular gap permitted without an exception to 0.75" for surface casings and to 0.5" for subsequent casings, which is unsupported by the technical literature. The latest version preserves this problematic language. EDF is concerned by the retention of the automatic 0.5" allowance for any casing strings, and we stress that there is solid support in the technical literature for an annular gap of at least 1.0" (as a general rule) for proper mud removal, proper cement emplacement and set times, and accurate cement logs if utilized. Adequate annular space is also important in order to effectively "fish" lost material out of a well.

Technical Discussion

There is ample discussion in the technical literature of optimal annular gap and cement sheath thickness. Generally, these sources favor as much as a 1.5" gap when considering ability to conduct cement log evaluations, efficacy of mud removal, optimal cement emplacement and other factors. The sources cited here represent a broad range of expert opinion tested over

time; some support 1.0" as a minimum while others allow a 0.75" minimum, but none recommend a 0.5" gap.[1]

The question here should not be what is the narrowest annular gap that can work in some circumstances (an exception process can govern that question) but what is an appropriate general rule if the Commission undertakes to regulate this aspect of well construction. In order to determine an optimal general rule governing annular gaps, the Commission should consider the following: (1) is the standard comfortably within the range that would satisfy the largest number of technical experts; (2) does the standard match conventional pipe size/drill bit configurations; and (3) will the standard avoid triggering undue numbers of exception requests. An annular gap of 0.75" fails the first of these three considerations since it does not fall within the range of all of the expert opinions we have been able to identify. The original proposal of 1.25" fails to satisfy the second consideration, and the upper suggested range of 1.5" fails to satisfy the third consideration. A 1.0" gap stands out as appropriately within the experts' range, conforms to industry standard equipment, and is unlikely to burden the Commission with frequent requests for exceptions. An annular gap of 0.5", unsupported by any technical literature, does not deserve serious consideration as a general rule, even though it may be adequate in certain situations.

We are concerned by the Commission's discussion of annular gap standards in its January 23rd, 2013, revised rule proposal. The Commission references two publications to support its decision to allow 0.5" annular gaps by rule. In neither case do these publications support annular gaps of 0.5". The Commission dismisses the guidance in API 10TR1, arguing on p. 3 that "[a] review of literature and discussions with industry experts indicates that, while ¾-inch cement sheath is necessary to obtain a good sonic log response, other cement evaluation tools can be successfully conducted with a lesser thickness." The Commission does not provide citations for this contention and does not grapple with the considerable technical literature calling for thicker cement sheaths for concerns other than facilitating cement evaluation. API 10TR1 itself notes that "the cement sheath around eccentered casing may not be thick enough to provide sufficient attenuation," suggesting that a thicker cement sheath insures against poor centralization. Further, while the Commission references Ilseng (SPE 94288) for the contention that optimal cement sheath thickness depends on cement slurry placement and cement sheath integrity, the Commission does not address that paper's call for a "minimum sheath thickness of 0.75 in...recommended as a low range with an optimal range of sheath thickness of 1.5 in..." Regardless of the final outcome of this issue, we hope the Commission in its final decision will discuss the relevant technical literature in a robust way.

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[1] API 10TR1 speaks to cement sheath thickness needed for adequate cement log evaluation, calling for at least 0.75"-- but it is important to remember that adequate cement log evaluation is only one consideration in deciding what annular gap is adequate. These other considerations favor a gap of more than 0.75" (except where an exception is granted for good cause). API 65-2 speaks to the importance of wider annuli for mud clearance and static gel strength. Azar, 2007 (Drilling Engineering, PennWell) recommends an annular clearance of 1.0"-1.5". Also see Ilseng et al, 2005 (SPE 94288); Wilson-Sabins, 1988 (SPE Drilling Engineering V. 3 N. 3); Lake, 2006 (Petroleum Engineering Handbook, SPE).

EDF's Recommendation

Based on the literature presented above and in our prior comments, we recommend that the Railroad Commission require an annular gap of at least 1" for all casing strings, subject to exception at the Director's approval. When evaluating exceptions, the director should consider whether the proposed annular gap is sufficiently large for the criteria described above. As an alternative, the RRC could require a minimum 1.0" gap for the surface casing, and for subsequent casings require operators to show that a smaller annular gap would meet a performance standard based on the following in order to isolate appropriate zones and prevent annular migration of formation fluid to protected water:

1) Optimize mud removal to promote proper cement emplacement
2) Permit sufficiently rapid cement set times to decrease gas channeling
3) Optimize the cement thickness needed for conducting cement evaluation when applicable.

The Director should also consider whether there are flow or corrosive zones in the formations through which the operator proposes a narrower annular gap. The ultimate consideration for this and all casing and cementing design considerations is whether the proposed well architecture will isolate appropriate zones and prevent annular migration of formation fluid to protected water. The comments submitted by Southwestern Energy on March 19, 2013, thoughtfully address the annular gap issue and other topics concerning proper sealing. We encourage the Commission to carefully consider these comments.

Should the RRC adopt either the 1.0" annular gap proposal or the performance standard proposal (the first being preferable to establish a strong norm and for ease of administration), EDF expects to support the final product of this rulemaking effort without hesitation.

Respectfully submitted,

Scott Anderson
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512-691-3410

January 2, 2013

Via Electronic Mail to Railroad Commission of Texas

Railroad Commission of Texas
1701 N. Congress
Austin, TX 78701

Re: Comments on Revised Proposed Rule 3.13 to Clarify Requirements for Drilling, Casing, Cementing and Fracture Stimulation

Dear Commissioners and Staff:

Environmental Defense Fund (EDF) once again commends the Railroad Commission for addressing so many well integrity issues in a single rulemaking effort. The revised draft does not address every issue that is worth addressing. And not every issue that is addressed is dealt with in precisely the manner we would prefer. However, EDF finds only one serious flaw in the current document – a provision that would create new, negative effects on well integrity rather than the positive effects the Commission intends.

Our concern relates to wellbore and casing string diameters. The Commission does not currently regulate wellbore and pipe diameter sizes even though this is a critical factor in obtaining good cement jobs. The American Petroleum Institute provides that "cement evaluation logs require a minimum ¾-in. cement sheath to sufficiently attenuate the sonic signal and attain a good log response," implying differences in diameter of at least 1.5 inches.[1] Of even more fundamental importance to well integrity itself, other leading authorities advise that as a general rule (setting aside for the moment special, slim hole completions) the annular gap should range from 0.75 inches to 1.5 inches (implying differences in diameters from 1.5 inches to 3.0 inches) – and suggest that 0.75 inches is often not enough because of the effects of high pressure on cement emplacement.[2]

When deciding whether and if so how to begin regulating wellbore and casing string diameters, we believe the agency should ask itself three questions:

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[1] Cement Sheath Evaluation, API Technical Report 10TR1, 2nd Edition, Sep. 2008, at 5

[2] J.J. Azar, Drilling Engineering, PennWell, 2007, at 309 ("The necessary clearance between the outside of the casing and the drilled hole depends on the hole and the mud condition. In cases where mud conditioning is good or the mud is lightweight and the formations are competent, a clearance of 1 ½ in. total diameter difference is acceptable. Primary cementing operations may not be successful given this clearance, and cementing backpressures will be high. A better clearance for general-purpose well completions is 2-3 in. For higher mud weights, poorer mud conditioning, poor quality hole, and higher formation pressures, the clearance should be increased."); Larry W. Lake, Petroleum Engineering Handbook, Society of Petroleum Engineers, 2006, at II-370 ("A minimum annular space of 0.75 to 1.5 in. (hole diameter 2 to 3 in. greater than casing diameter) is recommended. Annular clearances that are smaller restrict the flow characteristics and generally make it more difficult to displace fluids").

(1). Does the agency have reason to be concerned that operators in a meaningful number of cases may select pipe diameters that do not provide a sufficient annular gap? If this is not a concern, then now is not the time to address this matter in the rules.

(2). Assuming the agency does share this concern, does the Commission have the expertise and capacity to select a reasonable general rule and administer requests for exceptions in an appropriate way? If not, then now is not the time to tackle the issue.

(3). Assuming the Commission believes this is an important issue and that it would be helpful for the agency to begin providing oversight, what should the general rule be?

Industry has made a strong case that the original proposal, an annular gap of 1.25 inches, was not well conceived. Given that the authorities cited above do not believe that 0.75 inches is adequate in all instances, EDF recommends that the general rule for both surface casing and for subsequent casing strings (excluding reentries, liners and expandable casing) should provide for a cement sheath of at least 1.0 inches – a common configuration. We believe that in the large majority of situations industry would have no trouble meeting this requirement and exceptions would not be needed. We also believe that the most common exception would be to allow an annular gap of 0.75 inches, and that the primary consideration in deciding whether to permit 0.75 inches would be whether cement slurry design, emplacement procedures and other well-specific factors cancel out any concern about the effects of high fluid pressures given the narrower diameter. While we would expect that the Commission would sometimes grant exceptions to allow an annular gap of less than 0.75 inches, we would hope and expect that this would be done only rarely, since annular spaces narrower than 0.75 inches satisfy neither API's general recommendations for obtaining good cement bond log results nor the general recommendations in the technical literature for achieving quality cement jobs. To establish a general rule authorizing an annular gap of 0.5 inches (even just for casing strings deeper than the surface casing string) would be a step backwards – rather than improving well integrity in the state, the Commission would be encouraging industry to adopt sub-standard well configurations.

Assuming the final provisions deal adequately with the issue discussed above, EDF expects to support the final product of this rulemaking effort without hesitation.

Respectfully submitted,

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